



1

SEQUENCE LISTING

<110> KEELING, PETER
GAUN, HANPLING

<120> STARCH ENCAPSULATION

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<141> 2003-07-28

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aag atg gga gac ggg tac gag acg gtc agg ttc ttc cac tgc tac aag Lys Met Gly Asp Gly Tyr Glu Thr Val Arg Phe Phe His Cys Tyr Lys 65 70 75	1910
cgc gga gtg gac cgc gtg ttc gtt gac cac cca ctg ttc ctg gag agg Arg Gly Val Asp Arg Val Phe Val Asp His Pro Leu Phe Leu Glu Arg 80 85 90 95	1958
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ctt gaa gct cca agg atc ctg agc ctc aac aac cca tac ttc tcc Leu Glu Ala Pro Arg Ile Leu Ser Leu Asn Asn Asn Pro Tyr Phe Ser 130 135 140	2279

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Gly Pro Tyr			
145			
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Gly Glu Asp Val Val Phe Val Cys Asn Asp			
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Trp His Thr Gly Pro Leu Ser Cys Tyr Leu Lys Ser Asn Tyr Gln Ser			
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His Gly Ile Tyr Arg Asp Ala Lys			
175	180		
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Thr Ala Phe			
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Cys Ile His Asn Ile Ser Tyr Gln Gly Arg Phe Ala Phe Ser Asp Tyr			
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Pro Glu Leu Asn Leu Pro Glu Arg Phe Lys Ser Ser Phe Asp Phe Ile			
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Asp Gly			
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Tyr Glu Lys			
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 ccc gtg gaa ggc cgg aag atc aac tgg atg aag gcc ggg atc ctc gag 2915			
Pro Val Glu Gly Arg Lys Ile Asn Trp Met Lys Ala Gly Ile Leu Glu			
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 gcc gac agg gtc ctc acc gtc agc ccc tac tac gcc gag gag ctc atc 2963			
Ala Asp Arg Val Leu Thr Val Ser Pro Tyr Tyr Ala Glu Glu Leu Ile			
240	245	250	
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Ser Gly Ile Ala Arg Gly Cys Glu Leu Asp Asn Ile Met Arg Leu Thr			
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Gly Ile Thr Gly Ile Val Asn Gly Met Asp Val Ser Glu Trp Asp Pro			
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Ser Arg Asp Lys Tyr Ile Ala Val Lys Tyr Asp Val Ser Thr			
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 Cys Asn Val Val Glu Pro
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 Ala Asp Val Lys Lys Val Ala Thr Thr Leu Gln Arg Ala Ile Lys Val
 460 465 470

gtc ggc acg ccg gcg tac gag gag atg gtg agg aac tgc atg atc cag 4090
 Val Gly Thr Pro Ala Tyr Glu Glu Met Val Arg Asn Cys Met Ile Gln
 475 480 485 490

gat ctc tcc tgg aag gtacgtacgc ccggcccccgc ccggcccccgc agagcagagc 4145
 Asp Leu Ser Trp Lys
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gccaagatcg accgatcgac cgaccacacg tacgcgcctc gtcctgtcg ctgaccgtgg 4205

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 Gly Pro Ala Lys Asn Trp Glu Asn Val Leu
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ctc agc ctc ggg gtc gcc ggc gag cca ggg gtc gaa ggc gag gag 4304
 Leu Ser Leu Gly Val Ala Gly Glu Pro Gly Val Glu Gly Glu Glu
 510 515 520

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 Ile Ala Pro Leu Ala Lys Glu Asn Val Ala Ala Pro
 525 530

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 Asp Gln Tyr Lys Asp Ala Trp Asp Thr Ser Val Val Ser Glu Ile Lys
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 Met Gly Asp Gly Tyr Glu Thr Val Arg Phe Phe His Cys Tyr Lys Arg
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 Gly Val Asp Arg Val Phe Val Asp His Pro Leu Phe Leu Glu Arg Val
 85 90 95
 Trp Gly Lys Thr Glu Glu Lys Ile Tyr Gly Pro Val Ala Gly Thr Asp
 100 105 110
 Tyr Arg Asp Asn Gln Leu Arg Phe Ser Leu Leu Cys Gln Ala Ala Leu
 115 120 125
 Glu Ala Pro Arg Ile Leu Ser Leu Asn Asn Asn Pro Tyr Phe Ser Gly
 130 135 140
 Pro Tyr Gly Glu Asp Val Val Phe Val Cys Asn Asp Trp His Thr Gly
 145 150 155 160
 Pro Leu Ser Cys Tyr Leu Lys Ser Asn Tyr Gln Ser His Gly Ile Tyr
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 Arg Asp Ala Lys Thr Ala Phe Cys Ile His Asn Ile Ser Tyr Gln Gly
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 Arg Phe Ala Phe Ser Asp Tyr Pro Glu Leu Asn Leu Pro Glu Arg Phe
 195 200 205
 Lys Ser Ser Phe Asp Phe Ile Asp Gly Tyr Glu Lys Pro Val Glu Gly
 210 215 220
 Arg Lys Ile Asn Trp Met Lys Ala Gly Ile Leu Glu Ala Asp Arg Val
 225 230 235 240
 Leu Thr Val Ser Pro Tyr Tyr Ala Glu Glu Leu Ile Ser Gly Ile Ala
 245 250 255
 Arg Gly Cys Glu Leu Asp Asn Ile Met Arg Leu Thr Gly Ile Thr Gly
 260 265 270
 Ile Val Asn Gly Met Asp Val Ser Glu Trp Asp Pro Ser Arg Asp Lys
 275 280 285
 Tyr Ile Ala Val Lys Tyr Asp Val Ser Thr Ala Val Glu Ala Lys Ala
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Pro Asp Val Met Ala Ala Ala Ile Pro Gln Leu Met Glu Met Val Glu
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 385 390 395 400

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 Gln Gly Met Arg Tyr Gly Thr Pro Cys Ala Cys Ala Ser Thr Gly Gly
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 Ala Thr Thr Leu Gln Arg Ala Ile Lys Val Val Gly Thr Pro Ala Tyr
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 Pro Ala Lys Asn Trp Glu Asn Val Leu Leu Ser Leu Gly Val Ala Gly
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Met Ser Ala Leu Thr Thr Ser
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Gln Leu Ala Thr Ser Ala Thr Gly Phe Gly Ile Ala Asp Arg Ser Ala
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Pro Ser Ser Leu Leu Arg His Gly Phe Gln Gly Leu Lys Pro Arg Ser
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Pro Ala Gly Gly Asp Ala Thr Ser Leu Ser Val Thr Thr Ser Ala Arg
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Phe Phe His Cys Tyr Lys Arg Gly Val Asp Arg Val Phe Ile Asp His
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170 175 180

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Gly Pro Asp Thr Gly Val Asp Tyr Lys Asp Asn Gln Met Arg Phe Ser
185 190 195

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Cys Asn Asp Trp His Thr Gly Pro Leu Ala Ser Tyr Leu Lys Asn Asn	
235 240 245	
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Tyr Gln Pro Asn Gly Ile Tyr Arg Asn Ala Lys Val Ala Phe Cys Ile	
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His Asn Ile Ser Tyr Gln Gly Arg Phe Ala Phe Glu Asp Tyr Pro Glu	
265 270 275	
ctg aac ctc tcc gag agg ttc agg tca tcc ttc gat ttc atc gac ggg	1337
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Arg Leu Glu Glu Gln Lys Gly Pro Asp Val Met Ala Ala Ile Pro	
410 415 420	

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460 465 470	
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475 480 485	
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Ala Ser Thr Gly Gly Leu Val Asp Thr Val Ile Glu Gly Lys Thr Gly	
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Phe His Met Gly Arg Leu Ser Val Asp Cys Lys Val Val Glu Pro Ser	
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Gly Thr Pro Ala Tyr Glu Glu Met Val Arg Asn Cys Met Asn Gln Asp	
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Leu Gly Val Ala Gly Ser Ala Pro Gly Ile Glu Gly Asp Glu Ile Ala	
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ccg ctc gcc aag gag aac gtg gct gct cct tgaagagcct gagatctaca	2299
Pro Leu Ala Lys Glu Asn Val Ala Ala Pro	
600 605	
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Ser Val Thr Thr Ser Ala Arg Ala Thr Pro Lys Gln Gln Arg Ser Val
 50 55 60

Gln Arg Gly Ser Arg Arg Phe Pro Ser Val Val Val Tyr Ala Thr Gly
 65 70 75 80

Ala Gly Met Asn Val Val Phe Val Gly Ala Glu Met Ala Pro Trp Ser
 85 90 95

Lys Thr Gly Gly Leu Gly Asp Val Leu Gly Gly Leu Pro Pro Ala Met
 100 105 110

Ala Ala Asn Gly His Arg Val Met Val Ile Ser Pro Arg Tyr Asp Gln
 115 120 125

Tyr Lys Asp Ala Trp Asp Thr Ser Val Val Ala Glu Ile Lys Val Ala
 130 135 140

Asp Arg Tyr Glu Arg Val Arg Phe Phe His Cys Tyr Lys Arg Gly Val
 145 150 155 160

Asp Arg Val Phe Ile Asp His Pro Ser Phe Leu Glu Lys Val Trp Gly
 165 170 175

Lys Thr Gly Glu Lys Ile Tyr Gly Pro Asp Thr Gly Val Asp Tyr Lys
 180 185 190

Asp Asn Gln Met Arg Phe Ser Leu Leu Cys Gln Ala Ala Leu Glu Ala
 195 200 205

Pro Arg Ile Leu Asn Leu Asn Asn Asn Pro Tyr Phe Lys Gly Thr Tyr
 210 215 220

Gly Glu Asp Val Val Phe Val Cys Asn Asp Trp His Thr Gly Pro Leu
 225 230 235 240

Ala Ser Tyr Leu Lys Asn Asn Tyr Gln Pro Asn Gly Ile Tyr Arg Asn
 245 250 255

Ala Lys Val Ala Phe Cys Ile His Asn Ile Ser Tyr Gln Gly Arg Phe
 260 265 270

Ala Phe Glu Asp Tyr Pro Glu Leu Asn Leu Ser Glu Arg Phe Arg Ser
 275 280 285

Ser Phe Asp Phe Ile Asp Gly Tyr Asp Thr Pro Val Glu Gly Arg Lys
 290 295 300

Ile Asn Trp Met Lys Ala Gly Ile Leu Glu Ala Asp Arg Val Leu Thr
 305 310 315 320

Val Ser Pro Tyr Tyr Ala Glu Glu Leu Ile Ser Gly Ile Ala Arg Gly
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Cys Glu Leu Asp Asn Ile Met Arg Leu Thr Gly Ile Thr Gly Ile Val
 340 345 350

Asn Gly Met Asp Val Ser Glu Trp Asp Pro Ser Lys Asp Lys Tyr Ile
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Thr Ala Lys Tyr Asp Ala Thr Thr Ala Ile Glu Ala Lys Ala Leu Asn
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Lys Glu Ala Leu Gln Ala Glu Ala Gly Leu Pro Val Asp Arg Lys Ile
 385 390 395 400

Pro Leu Ile Ala Phe Ile Gly Arg Leu Glu Glu Gln Lys Gly Pro Asp
 405 410 415

Val Met Ala Ala Ala Ile Pro Glu Leu Met Gln Glu Asp Val Gln Ile
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Val Leu Leu Gly Thr Gly Lys Lys Lys Phe Glu Lys Leu Leu Lys Ser
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Met Glu Glu Lys Tyr Pro Gly Lys Val Arg Ala Val Val Lys Phe Asn
 450 455 460

Ala Pro Leu Ala His Leu Ile Met Ala Gly Ala Asp Val Leu Ala Val
 465 470 475 480

Pro Ser Arg Phe Glu Pro Cys Gly Leu Ile Gln Leu Gln Gly Met Arg
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Tyr Gly Thr Pro Cys Ala Cys Ala Ser Thr Gly Gly Leu Val Asp Thr
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Val Ile Glu Gly Lys Thr Gly Phe His Met Gly Arg Leu Ser Val Asp
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Cys Lys Val Val Glu Pro Ser Asp Val Lys Lys Val Ala Ala Thr Leu
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Lys Arg Ala Ile Lys Val Val Gly Thr Pro Ala Tyr Glu Glu Met Val
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Arg Asn Cys Met Asn Gln Asp Leu Ser Trp Lys Gly Pro Ala Lys Asn
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Asp Ala Ala Arg Leu Pro Arg Ala Arg Arg Asn Ala Val Ser Lys Arg
          20           25           30

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agg gat cct ctt cag ccg gtc ggc cg³⁵ tac ggc tcc gc⁴⁰ g acg gga aac 144
 Arg Asp Pro Leu Gln Pro Val Gly Arg Tyr Gly Ser Ala Thr Gly Asn
⁴⁵

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acg gcc agg acc ggc gcc gcg tcc tgc cag aac gcc gca ttg gcg gac      192
Thr Ala Arg Thr Gly Ala Ala Ser Cys Gln Asn Ala Ala Leu Ala Asp
      50          55          60

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gtt gag atc gtt gag atc aag tcc atc gtc gcc gcg ccg ccg acg agc      240
Val Glu Ile Val Glu Ile Lys Ser Ile Val Ala Ala Pro Pro Thr Ser
   65           70           75           80

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ata gtg aag ttc cca ggg cgc ggg cta cag gat gat cct tcc ctc tgg	288	
Ile Val Lys Phe Pro Gly Arg Gly Leu Gln Asp Asp Pro Ser Leu Trp		
85	90	95

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gac ata gca ccg gag act gtc ctc cca gcc ccg aag cca ctg cat gaa      336
Asp Ile Ala Pro Glu Thr Val Leu Pro Ala Pro Lys Pro Leu His Glu
          100           105           110

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tcg cct gcg gtt gac gga gat tca aat gga att gca cct cct aca gtt 384
Ser Pro Ala Val Asp Gly Asp Ser Asn Gly Ile Ala Pro Pro Thr Val
           115          120          125

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gag cca tta gta cag gag gcc act tgg gat ttc aag aaa tac atc ggt 432
Glu Pro Leu Val Gln Glu Ala Thr Trp Asp Phe Lys Lys Tyr Ile Gly
    130          135          140

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ttt gag gag cct gac gaa gcg aag gat gat tcc agg gtt ggt gca gat Phe Asp Glu Pro Asp Glu Ala Lys Asp Asp Ser Arg Val Gly Ala Asp	145	150	155	160	480
gat gct ggt tct ttt gaa cat tat ggg aca atg att ctg ggc ctt tgt Asp Ala Gly Ser Phe Glu His Tyr Gly Thr Met Ile Leu Gly Leu Cys	165	170	175		528
ggg gag aat gtt atg aac gtg atc gtg gtg gct gct gaa tgt tct cca Gly Glu Asn Val Met Asn Val Ile Val Val Ala Ala Glu Cys Ser Pro	180	185	190		576
tgg tgc aaa aca ggt ggt ctt gga gat gtt gtg gga gct tta ccc aag Trp Cys Lys Thr Gly Gly Leu Gly Asp Val Val Gly Ala Leu Pro Lys	195	200	205		624
gct tta gcg aga aga gga cat cgt gtt atg gtt gtg gta cca agg tat Ala Leu Ala Arg Arg Gly His Arg Val Met Val Val Val Pro Arg Tyr	210	215	220		672
ggg gac tat gtg gaa gcc ttt gat atg gga atc cgg aaa tac tac aaa Gly Asp Tyr Val Glu Ala Phe Asp Met Gly Ile Arg Lys Tyr Tyr Lys	225	230	235	240	720
gct gca gga cag gac cta gaa gtg aac tat ttc cat gca ttt att gat Ala Ala Gly Gln Asp Leu Glu Val Asn Tyr Phe His Ala Phe Ile Asp	245	250	255		768
gga gtc gac ttt gtg ttc att gat gcc tct ttc cgg cac cgt caa gat Gly Val Asp Phe Val Phe Ile Asp Ala Ser Phe Arg His Arg Gln Asp	260	265	270		816
gac ata tat ggg gga agt agg cag gaa atc atg aag cgc atg att ttg Asp Ile Tyr Gly Ser Arg Gln Glu Ile Met Lys Arg Met Ile Leu	275	280	285		864
ttt tgc aag gtt gct gtt gag gtt cct tgg cac gtt cca tgc ggt ggt Phe Cys Lys Val Ala Val Glu Val Pro Trp His Val Pro Cys Gly Gly	290	295	300		912
gtg tgc tac gga gat gga aat ttg gtg ttc att gcc atg aat tgg cac Val Cys Tyr Asp Gly Asn Leu Val Phe Ile Ala Met Asn Trp His	305	310	315	320	960
act gca ctc ctg cct gtt tat ctg aag gca tat tac aga gac cat ggg Thr Ala Leu Leu Pro Val Tyr Leu Lys Ala Tyr Tyr Arg Asp His Gly	325	330	335		1008
tta atg cag tac act cgc tcc gtc ctc gtc ata cat aac atc ggc cac Leu Met Gln Tyr Thr Arg Ser Val Leu Val Ile His Asn Ile Gly His	340	345	350		1056
cag ggc cgt ggt cct gta cat gaa ttc ccg tac atg gac ttg ctg aac Gln Gly Arg Gly Pro Val His Glu Phe Pro Tyr Met Asp Leu Leu Asn	355	360	365		1104

act aac ctt caa cat ttc gag ctg tac gat ccc gtc ggt ggc gag cac	1152
Thr Asn Leu Gln His Phe Glu Leu Tyr Asp Pro Val Gly Gly Glu His	
370 375 380	
gcc aac atc ttt gcc gcg tgt gtt ctg aag atg gca gac cggt gtg gtg	1200
Ala Asn Ile Phe Ala Ala Cys Val Leu Lys Met Ala Asp Arg Val Val	
385 390 395 400	
act gtc agc cgc ggc tac ctg tgg gag ctg aag aca gtg gaa ggc ggc	1248
Thr Val Ser Arg Gly Tyr Leu Trp Glu Leu Lys Thr Val Glu Gly Gly	
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tgg ggc ctc cac gac atc atc cgt tct aac gac tgg aag atc aat ggc	1296
Trp Gly Leu His Asp Ile Ile Arg Ser Asn Asp Trp Lys Ile Asn Gly	
420 425 430	
att cgt gaa cgc atc gac cac cag gag tgg aac ccc aag gtg gac gtg	1344
Ile Arg Glu Arg Ile Asp His Gln Glu Trp Asn Pro Lys Val Asp Val	
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His Leu Arg Ser Asp Gly Tyr Thr Asn Tyr Ser Leu Glu Thr Leu Asp	
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gct gga aag cgg cag tgc aag gcg gcc ctg cag cgg gac gtg ggc ctg	1440
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Glu Val Arg Asp Asp Val Pro Leu Leu Gly Phe Ile Gly Arg Leu Asp	
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gga cag aag ggc gtg gac atc atc ggg gac gcg atg ccg tgg atc gcg	1536
Gly Gln Lys Gly Val Asp Ile Ile Gly Asp Ala Met Pro Trp Ile Ala	
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Gly Gln Asp Val Gln Leu Val Met Leu Gly Thr Gly Pro Pro Asp Leu	
515 520 525	
gaa cga atg ctg cag cac ttg gag cgg gag cat ccc aac aag gtg cgc	1632
Glu Arg Met Leu Gln His Leu Glu Arg Glu His Pro Asn Lys Val Arg	
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Gly Trp Val Gly Phe Ser Val Leu Met Val His Arg Ile Thr Pro Gly	
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gcc agc gtg ctg gtg atg ccc tcc cgc ttc gcc ggc ggg ctg aac cag	1728
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565 570 575	
ctc tac gcg atg gca tac ggc acc gtc cct gtg gtg cac gcc gtg ggc	1776
Leu Tyr Ala Met Ala Tyr Gly Thr Val Pro Val Val His Ala Val Gly	
580 585 590	

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Gly Leu Arg Asp Thr Val Ala Pro Phe Asp Pro Phe Gly Asp Ala Gly	
595	600
	605
ctc ggg tgg act ttt gac cgc gcc gag gcc aac aag ctg atc gag gtg	1872
Leu Gly Trp Thr Phe Asp Arg Ala Glu Ala Asn Lys Leu Ile Glu Val	
610	615
	620
ctc agc cac tgc ctc gac acg tac cga aac tac gag gag agc tgg aag	1920
Leu Ser His Cys Leu Asp Thr Tyr Arg Asn Tyr Glu Glu Ser Trp Lys	
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	635
	640
agt ctc cag gcg cgc ggc atg tcg cag aac ctc agc tgg gac cac gcg	1968
Ser Leu Gln Ala Arg Gly Met Ser Gln Asn Leu Ser Trp Asp His Ala	
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Arg Asp Pro Leu Gln Pro Val Gly Arg Tyr Gly Ser Ala Thr Gly Asn	
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Thr Ala Arg Thr Gly Ala Ala Ser Cys Gln Asn Ala Ala Leu Ala Asp	
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Val Glu Ile Val Glu Ile Lys Ser Ile Val Ala Ala Pro Pro Thr Ser	
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Ile Val Lys Phe Pro Gly Arg Gly Leu Gln Asp Asp Pro Ser Leu Trp	
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Asp Ile Ala Pro Glu Thr Val Leu Pro Ala Pro Lys Pro Leu His Glu	
100	105
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Ser Pro Ala Val Asp Gly Asp Ser Asn Gly Ile Ala Pro Pro Thr Val	
115	120
	125
Glu Pro Leu Val Gln Glu Ala Thr Trp Asp Phe Lys Lys Tyr Ile Gly	
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Phe Asp Glu Pro Asp Glu Ala Lys Asp Asp Ser Arg Val Gly Ala Asp	
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Asp Ala Gly Ser Phe Glu His Tyr Gly Thr Met Ile Leu Gly Leu Cys
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 Gly Glu Asn Val Met Asn Val Ile Val Val Ala Ala Glu Cys Ser Pro
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 Trp Cys Lys Thr Gly Gly Leu Gly Asp Val Val Gly Ala Leu Pro Lys
 195 200 205

 Ala Leu Ala Arg Arg Gly His Arg Val Met Val Val Val Pro Arg Tyr
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 Gly Asp Tyr Val Glu Ala Phe Asp Met Gly Ile Arg Lys Tyr Tyr Lys
 225 230 235 240

 Ala Ala Gly Gln Asp Leu Glu Val Asn Tyr Phe His Ala Phe Ile Asp
 245 250 255

 Gly Val Asp Phe Val Phe Ile Asp Ala Ser Phe Arg His Arg Gln Asp
 260 265 270

 Asp Ile Tyr Gly Gly Ser Arg Gln Glu Ile Met Lys Arg Met Ile Leu
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 Phe Cys Lys Val Ala Val Glu Val Pro Trp His Val Pro Cys Gly Gly
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 Val Cys Tyr Gly Asp Gly Asn Leu Val Phe Ile Ala Met Asn Trp His
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 Thr Ala Leu Leu Pro Val Tyr Leu Lys Ala Tyr Tyr Arg Asp His Gly
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 Leu Met Gln Tyr Thr Arg Ser Val Leu Val Ile His Asn Ile Gly His
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 Gln Gly Arg Gly Pro Val His Glu Phe Pro Tyr Met Asp Leu Leu Asn
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 Thr Asn Leu Gln His Phe Glu Leu Tyr Asp Pro Val Gly Gly Glu His
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 Ala Asn Ile Phe Ala Ala Cys Val Leu Lys Met Ala Asp Arg Val Val
 385 390 395 400

 Thr Val Ser Arg Gly Tyr Leu Trp Glu Leu Lys Thr Val Glu Gly Gly
 405 410 415

 Trp Gly Leu His Asp Ile Ile Arg Ser Asn Asp Trp Lys Ile Asn Gly
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 Ile Arg Glu Arg Ile Asp His Gln Glu Trp Asn Pro Lys Val Asp Val
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 His Leu Arg Ser Asp Gly Tyr Thr Asn Tyr Ser Leu Glu Thr Leu Asp
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Ala Gly Lys Arg Gln Cys Lys Ala Ala Leu Gln Arg Asp Val Gly Leu
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Glu Val Arg Asp Asp Val Pro Leu Leu Gly Phe Ile Gly Arg Leu Asp
 485 490 495

Gly Gln Lys Gly Val Asp Ile Ile Gly Asp Ala Met Pro Trp Ile Ala
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Gly Gln Asp Val Gln Leu Val Met Leu Gly Thr Gly Pro Pro Asp Leu
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Glu Arg Met Leu Gln His Leu Glu Arg Glu His Pro Asn Lys Val Arg
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Gly Trp Val Gly Phe Ser Val Leu Met Val His Arg Ile Thr Pro Gly
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Ala Ser Val Leu Val Met Pro Ser Arg Phe Ala Gly Gly Leu Asn Gln
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Leu Tyr Ala Met Ala Tyr Gly Thr Val Pro Val Val His Ala Val Gly
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Gly Leu Arg Asp Thr Val Ala Pro Phe Asp Pro Phe Gly Asp Ala Gly
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Leu Gly Trp Thr Phe Asp Arg Ala Glu Ala Asn Lys Leu Ile Glu Val
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Leu Ser His Cys Leu Asp Thr Tyr Arg Asn Tyr Glu Glu Ser Trp Lys
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 Ala Ser Ser Pro Arg Arg Arg Gly Ser Val Gly Ala Ala Leu
 20 25 30

cgc tcg tac ggc tac agc ggc gcg gag ctg cgg ttg cat tgg gcg cg	144
Arg Ser Tyr Gly Tyr Ser Gly Ala Glu Leu Arg Leu His Trp Ala Arg	
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cgg ggc ccg cct cag gat gga gcg gcg tcg gta cgc gcc gca gcg gca	192
Arg Gly Pro Pro Gln Asp Gly Ala Ala Ser Val Arg Ala Ala Ala Ala	
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ccg gcc ggg ggc gaa agc gag gag gca gcg aag agc tcc tcc tcg tcc	240
Pro Ala Gly Gly Glu Ser Glu Ala Ala Lys Ser Ser Ser Ser Ser	
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Gln Ala Gly Ala Val Gln Gly Ser Thr Ala Lys Ala Val Asp Ser Ala	
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tca cct ccc aat cct ttg aca tct gct ccg aag caa agt cag agc gct	336
Ser Pro Pro Asn Pro Leu Thr Ser Ala Pro Lys Gln Ser Gln Ser Ala	
100 105 110	
gca atg caa aac gga acg agt ggg ggc agc agc gcg agc acc gcc gcg	384
Ala Met Gln Asn Gly Thr Ser Gly Ser Ser Ala Ser Thr Ala Ala	
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Pro Val Ser Gly Pro Lys Ala Asp His Pro Ser Ala Pro Val Thr Lys	
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Arg Glu Ile Asp Ala Ser Ala Val Lys Pro Glu Pro Ala Gly Asp Asp	
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Ala Arg Pro Val Glu Ser Ile Gly Ile Ala Glu Pro Val Asp Ala Lys	
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Arg Glu Asp Asn Glu Pro Gly Pro Leu Ala Gly Pro Asn Val Met Asn	
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Val Val Val Ala Ser Glu Cys Ala Pro Phe Cys Lys Thr Gly Gly	
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Leu Gly Asp Val Val Gly Ala Leu Pro Lys Ala Leu Ala Arg Arg Gly	
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His Arg Val Met Val Val Ile Pro Arg Tyr Gly Glu Tyr Ala Glu Ala	
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Glu Val Thr Tyr Phe His Ser Tyr Ile Asp Gly Val Asp Phe Val Phe	
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Val Glu Ala Pro Pro Phe Arg His Arg His Asn Asn Ile Tyr Gly Gly	
290 295 300	
gaa aga ttg gat att ttg aag cg ^c atg att ttg ttc tgc aag gcc gct	960
Glu Arg Leu Asp Ile Leu Lys Arg Met Ile Leu Phe Cys Lys Ala Ala	
305 310 315 320	
gtt gag gtt cca tgg tat gct cca tgt ggc ggt act gtc tat ggt gat	1008
Val Glu Val Pro Trp Tyr Ala Pro Cys Gly Gly Thr Val Tyr Gly Asp	
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Gly Asn Leu Val Phe Ile Ala Asn Asp Trp His Thr Ala Leu Leu Pro	
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atc atc gcc gac gcg atc cac tgg atc gcg ggg cag gac gtg cag ctc Ile Ile Ala Asp Ala Ile His Trp Ile Ala Gly Gln Asp Val Gln Leu 530 535 540	1632
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Arg Gly Pro Pro Gln Asp Gly Ala Ala Ser Val Arg Ala Ala Ala Ala
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Pro Ala Gly Gly Glu Ser Glu Glu Ala Ala Lys Ser Ser Ser Ser Ser
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Gln Ala Gly Ala Val Gln Gly Ser Thr Ala Lys Ala Val Asp Ser Ala
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Ser Pro Pro Asn Pro Leu Thr Ser Ala Pro Lys Gln Ser Gln Ser Ala
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Ala Met Gln Asn Gly Thr Ser Gly Gly Ser Ser Ala Ser Thr Ala Ala
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Pro Val Ser Gly Pro Lys Ala Asp His Pro Ser Ala Pro Val Thr Lys
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Arg Glu Ile Asp Ala Ser Ala Val Lys Pro Glu Pro Ala Gly Asp Asp
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Ala Arg Pro Val Glu Ser Ile Gly Ile Ala Glu Pro Val Asp Ala Lys
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Ala Asp Ala Ala Pro Ala Thr Asp Ala Ala Ala Ser Ala Pro Tyr Asp
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Arg Glu Asp Asn Glu Pro Gly Pro Leu Ala Gly Pro Asn Val Met Asn
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Val Val Val Val Ala Ser Glu Cys Ala Pro Phe Cys Lys Thr Gly Gly
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Leu Gly Asp Val Val Gly Ala Leu Pro Lys Ala Leu Ala Arg Arg Gly
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His Arg Val Met Val Val Ile Pro Arg Tyr Gly Glu Tyr Ala Glu Ala
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Arg Asp Leu Gly Val Arg Arg Tyr Lys Val Ala Gly Gln Asp Ser
 260 265 270

Glu Val Thr Tyr Phe His Ser Tyr Ile Asp Gly Val Asp Phe Val Phe
 275 280 285

Val Glu Ala Pro Pro Phe Arg His Arg His Asn Asn Ile Tyr Gly Gly
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Gly Asn Leu Val Phe Ile Ala Asn Asp Trp His Thr Ala Leu Leu Pro
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Val Tyr Leu Lys Ala Tyr Tyr Arg Asp Asn Gly Leu Met Gln Tyr Ala
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Arg Ser Val Leu Val Ile His Asn Ile Ala His Gln Gly Arg Gly Pro
 370 375 380

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 385 390 395 400

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 405 410 415

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Met Trp Glu Leu Lys Thr Ser Glu Gly Gly Trp Gly Leu His Asp Ile
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 450 455 460

Met Ser Glu Trp Asn Pro Ala Val Asp Val His Leu His Ser Asp Asp
 465 470 475 480

Tyr Thr Asn Tyr Thr Phe Glu Thr Leu Asp Thr Gly Lys Arg Gln Cys
 485 490 495

Lys Ala Ala Leu Gln Arg Gln Leu Gly Leu Gln Val Arg Asp Asp Val
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Pro Leu Ile Gly Phe Ile Gly Arg Leu Asp His Gln Lys Gly Val Asp
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Ile Ile Ala Asp Ala Ile His Trp Ile Ala Gly Gln Asp Val Gln Leu
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Val Met Leu Gly Thr Gly Arg Ala Asp Leu Glu Asp Met Leu Arg Arg
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Phe Glu Ser Glu His Ser Asp Lys Val Arg Ala Trp Val Gly Phe Ser
 565 570 575

Val Pro Leu Ala His Arg Ile Thr Ala Gly Ala Asp Ile Leu Leu Met
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 Pro Ser Arg Phe Glu Pro Cys Gly Leu Asn Gln Leu Tyr Ala Met Ala
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 Tyr Gly Thr Val Pro Val Val His Ala Val Gly Gly Leu Arg Asp Thr
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 Val Ala Pro Phe Asp Pro Phe Asn Asp Thr Gly Leu Gly Trp Thr Phe
 625 630 635 640
 Asp Arg Ala Glu Ala Asn Arg Met Ile Asp Ala Leu Ser His Cys Leu
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 Thr Thr Tyr Arg Asn Tyr Lys Glu Ser Trp Arg Ala Cys Arg Ala Arg
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 Pro Ala Leu Leu Ala Pro Pro Leu Val Pro Gly Phe Leu Ala Pro Pro
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 gcc gag ccc acg ggt gag ccg gca tcg acg ccg ccg ccc gtg ccc gac 144
 Ala Glu Pro Thr Gly Glu Pro Ala Ser Thr Pro Pro Pro Val Pro Asp
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 gcc ggc ctg ggg gac ctc ggt ctc gaa cct gaa ggg att gct gaa ggt 192
 Ala Gly Leu Gly Asp Leu Gly Leu Glu Pro Glu Gly Ile Ala Glu Gly
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 tcc atc gat aac aca gta gtt gtg gca agt gag caa gat tct gag att 240
 Ser Ile Asp Asn Thr Val Val Val Ala Ser Glu Gln Asp Ser Glu Ile
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 gtg gtt gga aag gag caa gct cga gct aaa gta aca caa agc att gtc 288
 Val Val Gly Lys Glu Gln Ala Arg Ala Lys Val Thr Gln Ser Ile Val
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Phe Val Thr Gly Glu Ala Ser Pro Tyr Ala Lys Ser Gly Gly Leu Gly	
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gat gtt tgt ggt tca ttg cca gtt gct ctt gct gct cgt ggt cac cgt	384
Asp Val Cys Gly Ser Leu Pro Val Ala Leu Ala Ala Arg Gly His Arg	
115 120 125	
gtg atg gtt gta atg ccc aga tat tta aat ggt acc tcc gat aag aat	432
Val Met Val Val Met Pro Arg Tyr Leu Asn Gly Thr Ser Asp Lys Asn	
130 135 140	
tat gca aat gca ttt tac aca gaa aaa cac att cgg att cca tgc ttt	480
Tyr Ala Asn Ala Phe Tyr Thr Glu Lys His Ile Arg Ile Pro Cys Phe	
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ggc ggt gaa cat gaa gtt acc ttc ttc cat gag tat aga gat tca gtt	528
Gly Gly His Glu Val Thr Phe Phe His Glu Tyr Arg Asp Ser Val	
165 170 175	
gac tgg gtg ttt gtt gat cat ccc tca tat cac aga cct gga aat tta	576
Asp Trp Val Phe Val Asp His Pro Ser Tyr His Arg Pro Gly Asn Leu	
180 185 190	
tat gga gat aag ttt ggt gct ttt ggt gat aat cag ttc aga tac aca	624
Tyr Gly Asp Lys Phe Gly Ala Phe Gly Asp Asn Gln Phe Arg Tyr Thr	
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ctc ctt tgc tat gct gca tgt gag gct cct ttg atc ctt gaa ttg gga	672
Leu Leu Cys Tyr Ala Ala Cys Glu Ala Pro Leu Ile Leu Glu Leu Gly	
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Gly Tyr Ile Tyr Gly Gln Asn Cys Met Phe Val Val Asn Asp Trp His	
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Ala Ser Leu Val Pro Val Leu Ala Ala Lys Tyr Arg Pro Tyr Gly	
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gtt tat aaa gac tcc cgc agc att ctt gta ata cat aat tta gca cat	816
Val Tyr Lys Asp Ser Arg Ser Ile Leu Val Ile His Asn Leu Ala His	
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Gln Gly Val Glu Pro Ala Ser Thr Tyr Pro Asp Leu Gly Leu Pro Pro	
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Glu Trp Tyr Gly Ala Leu Glu Trp Val Phe Pro Glu Trp Ala Arg Arg	
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His Ala Leu Asp Lys Gly Glu Ala Val Asn Phe Leu Lys Gly Ala Val	
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Val Thr Thr Ala Glu Gly Gly Gln Gly Leu Asn Glu Leu Leu Ser Ser			
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aga aag agt gta tta aac gga att gta aat gga att gac att aat gat		1104	
Arg Lys Ser Val Leu Asn Gly Ile Val Asn Gly Ile Asp Ile Asn Asp			
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Trp Asn Pro Ala Thr Asp Lys Cys Ile Pro Cys His Tyr Ser Val Asp			
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Asp Leu Ser Gly Lys Ala Lys Cys Lys Gly Ala Leu Gln Lys Glu Leu			
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Gly Leu Pro Ile Arg Pro Asp Val Pro Leu Ile Gly Phe Ile Gly Arg			
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Leu Asp Tyr Gln Lys Gly Ile Asp Leu Ile Gln Leu Ile Ile Pro Asp			
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ctc atg cg ^g gaa gat gtt caa ttt gtc atg ctt gga tct ggt gac cca		1344	
Leu Met Arg Glu Asp Val Gln Phe Val Met Leu Gly Ser Gly Asp Pro			
435	440	445	
gag ctt gaa gat tgg atg aga tct aca gag tcg atc ttc aag gat aaa		1392	
Glu Leu Glu Asp Trp Met Arg Ser Thr Glu Ser Ile Phe Lys Asp Lys			
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Phe Arg Gly Trp Val Gly Phe Ser Val Pro Val Ser His Arg Ile Thr			
465	470	475	480
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Ala Gly Cys Asp Ile Leu Leu Met Pro Ser Arg Phe Glu Pro Cys Gly			
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ctc aat cag cta tat gct atg cag tat ggc aca gtt cct gtt gtc cat		1536	
Leu Asn Gln Leu Tyr Ala Met Gln Tyr Gly Thr Val Pro Val Val His			
500	505	510	
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Ala Thr Gly Gly Leu Arg Asp Thr Val Glu Asn Phe Asn Pro Phe Gly			
515	520	525	
gag aat gga gag cag ggt aca ggg tgg gca ttc gca ccc cta acc aca		1632	
Glu Asn Gly Glu Gln Gly Thr Gly Trp Ala Phe Ala Pro Leu Thr Thr			
530	535	540	

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aca caa gtc ctc ctg gga agg gct aat gaa gcg agg cat gtc aaa aga		1728
Thr Gln Val Leu Leu Gly Arg Ala Asn Glu Ala Arg His Val Lys Arg		
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Ala Glu Pro Thr Gly Glu Pro Ala Ser Thr Pro Pro Pro Val Pro Asp		
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Ala Gly Leu Gly Asp Leu Gly Leu Glu Pro Glu Gly Ile Ala Glu Gly		
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Ser Ile Asp Asn Thr Val Val Val Ala Ser Glu Gln Asp Ser Glu Ile		
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Val Val Gly Lys Glu Gln Ala Arg Ala Lys Val Thr Gln Ser Ile Val		
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Phe Val Thr Gly Glu Ala Ser Pro Tyr Ala Lys Ser Gly Gly Leu Gly		
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Asp Val Cys Gly Ser Leu Pro Val Ala Leu Ala Ala Arg Gly His Arg		
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Val Met Val Val Met Pro Arg Tyr Leu Asn Gly Thr Ser Asp Lys Asn		
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Tyr Ala Asn Ala Phe Tyr Thr Glu Lys His Ile Arg Ile Pro Cys Phe		
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Gly Gly Glu His Glu Val Thr Phe Phe His Glu Tyr Arg Asp Ser Val		
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Asp Trp Val Phe Val Asp His Pro Ser Tyr His Arg Pro Gly Asn Leu		
180	185	190
Tyr Gly Asp Lys Phe Gly Ala Phe Gly Asp Asn Gln Phe Arg Tyr Thr		
195	200	205

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 Gly Tyr Ile Tyr Gly Gln Asn Cys Met Phe Val Val Asn Asp Trp His
 225 230 235 240
 Ala Ser Leu Val Pro Val Leu Leu Ala Ala Lys Tyr Arg Pro Tyr Gly
 245 250 255
 Val Tyr Lys Asp Ser Arg Ser Ile Leu Val Ile His Asn Leu Ala His
 260 265 270
 Gln Gly Val Glu Pro Ala Ser Thr Tyr Pro Asp Leu Gly Leu Pro Pro
 275 280 285
 Glu Trp Tyr Gly Ala Leu Glu Trp Val Phe Pro Glu Trp Ala Arg Arg
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 His Ala Leu Asp Lys Gly Glu Ala Val Asn Phe Leu Lys Gly Ala Val
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 Val Thr Ala Asp Arg Ile Val Thr Val Ser Lys Gly Tyr Ser Trp Glu
 325 330 335
 Val Thr Thr Ala Glu Gly Gly Gln Gly Leu Asn Glu Leu Leu Ser Ser
 340 345 350
 Arg Lys Ser Val Leu Asn Gly Ile Val Asn Gly Ile Asp Ile Asn Asp
 355 360 365
 Trp Asn Pro Ala Thr Asp Lys Cys Ile Pro Cys His Tyr Ser Val Asp
 370 375 380
 Asp Leu Ser Gly Lys Ala Lys Cys Lys Gly Ala Leu Gln Lys Glu Leu
 385 390 395 400
 Gly Leu Pro Ile Arg Pro Asp Val Pro Leu Ile Gly Phe Ile Gly Arg
 405 410 415
 Leu Asp Tyr Gln Lys Gly Ile Asp Leu Ile Gln Leu Ile Ile Pro Asp
 420 425 430
 Leu Met Arg Glu Asp Val Gln Phe Val Met Leu Gly Ser Gly Asp Pro
 435 440 445
 Glu Leu Glu Asp Trp Met Arg Ser Thr Glu Ser Ile Phe Lys Asp Lys
 450 455 460
 Phe Arg Gly Trp Val Gly Phe Ser Val Pro Val Ser His Arg Ile Thr
 465 470 475 480
 Ala Gly Cys Asp Ile Leu Leu Met Pro Ser Arg Phe Glu Pro Cys Gly
 485 490 495
 Leu Asn Gln Leu Tyr Ala Met Gln Tyr Gly Thr Val Pro Val Val His
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Ala Thr Gly Gly Leu Arg Asp Thr Val Glu Asn Phe Asn Pro Phe Gly
 515 520 525

Glu Asn Gly Glu Gln Gly Thr Gly Trp Ala Phe Ala Pro Leu Thr Thr
 530 535 540

Glu Asn Met Phe Val Asp Ile Ala Asn Cys Asn Ile Tyr Ile Gln Gly
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 Met Ala Phe Arg Val Ser Gly Ala
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 Val Leu Gly Gly Ala Val Arg Ala Pro Arg Leu Thr Gly Gly Glu
 -50 -45 -40 -35

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 -15 -10 -5

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Asp Ile Ser Glu Glu Thr Thr Cys Gly Ala Gly Val Ala Asp Ala Gln	
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Ala Leu Asn Arg Val Arg Val Val Pro Pro Pro Ser Asp Gly Gln Lys	
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Ile Phe Gln Ile Asp Pro Met Leu Gln Gly Tyr Lys Tyr His Leu Glu	
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Tyr Arg Tyr Ser Leu Tyr Arg Arg Ser Asp Ile Asp Glu His	
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Glu Gly Gly Leu Glu Ala Phe Ser Arg Ser Tyr Glu Lys Phe Gly Phe	
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Asn Ala Ser Ala Glu Gly Ile Thr Tyr Arg Glu Trp Ala Pro Gly Ala	
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Phe Ser Ala Ala Leu Val Gly Asp Val Asn Asn Trp Asp Pro Asn Ala	
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Val Arg Met Asp Thr Pro Ser Gly Ile Lys Asp Ser Ile Pro Ala Trp	
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Ile Lys Tyr Ser Val Gln Ala Pro Gly Glu Ile Pro Tyr Asp Gly Ile	
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Tyr Tyr Asp Pro Pro Glu Glu Val Lys Tyr Val Phe Arg His Ala Gln	
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Pro Lys Arg Pro Lys Ser Leu Arg Ile Tyr Glu Thr His Val Gly Met	
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Asn Phe Phe Ala Pro Ser Ser Arg Phe Gly Thr Pro Glu Asp Leu Lys	
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Phe Asp Gly Thr Asp Thr His Tyr Phe His Ser Gly Pro Arg Gly His	
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His Trp Met Trp Asp Ser Arg Leu Phe Asn Tyr Gly Asn Trp Glu Val	
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Leu Ile His Gly Leu Tyr Pro Glu Ala Val Thr Ile Gly Glu Asp Val	
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Ser Gly Met Pro Thr Phe Ala Leu Pro Val His Asp Gly Gly Val Gly	
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Ser Arg Ile His His Ala Ala Glu His Phe Thr Ala Asp Cys Ser His	
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Ile Arg Ser Asp Ile Asp Glu His Glu Gly Gly Leu Glu Ala Phe Ser
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 Arg Ser Tyr Glu Lys Phe Gly Phe Asn Ala Ser Ala Glu Gly Ile Thr
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 Gly Val Trp Glu Ile Phe Leu Pro Asn Ala Asp Gly Thr Ser Pro
 155 160 165
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 Ile Lys Asp Ser Ile Pro Ala Trp Ile Lys Tyr Ser Val Gln Ala Pro
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 Gly Glu Ile Pro Tyr Asp Gly Ile Tyr Tyr Asp Pro Pro Glu Glu Val
 200 205 210
 Lys Tyr Val Phe Arg His Ala Gln Pro Lys Arg Pro Lys Ser Leu Arg
 215 220 225 230
 Ile Tyr Glu Thr His Val Gly Met Ser Ser Pro Glu Pro Lys Ile Asn
 235 240 245
 Thr Tyr Val Asn Phe Arg Asp Glu Val Leu Pro Arg Ile Lys Lys Leu
 250 255 260
 Gly Tyr Asn Ala Val Gln Ile Met Ala Ile Gln Glu His Ser Tyr Tyr
 265 270 275
 Gly Ser Phe Gly Tyr His Val Thr Asn Phe Phe Ala Pro Ser Ser Arg
 280 285 290
 Phe Gly Thr Pro Glu Asp Leu Lys Ser Leu Ile Asp Arg Ala His Glu
 295 300 305 310
 Leu Gly Leu Leu Val Leu Met Asp Val Val His Ser His Ala Ser Ser
 315 320 325
 Asn Thr Leu Asp Gly Leu Asn Gly Phe Asp Gly Thr Asp Thr His Tyr
 330 335 340
 Phe His Ser Gly Pro Arg Gly His His Trp Met Trp Asp Ser Arg Leu
 345 350 355
 Phe Asn Tyr Gly Asn Trp Glu Val Leu Arg Phe Leu Leu Ser Asn Ala
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 Arg Trp Trp Leu Glu Glu Tyr Lys Phe Asp Gly Phe Arg Phe Asp Gly
 375 380 385 390

Val Thr Ser Met Met Tyr Thr His His Gly Leu Gln Val Thr Phe Thr
 395 400 405
 Gly Asn Phe Asn Glu Tyr Phe Gly Phe Ala Thr Asp Val Asp Ala Val
 410 415 420
 Val Tyr Leu Met Leu Val Asn Asp Leu Ile His Gly Leu Tyr Pro Glu
 425 430 435
 Ala Val Thr Ile Gly Glu Asp Val Ser Gly Met Pro Thr Phe Ala Leu
 440 445 450
 Pro Val His Asp Gly Gly Val Gly Phe Asp Tyr Arg Met His Met Ala
 455 460 465 470
 Val Ala Asp Lys Trp Ile Asp Leu Leu Lys Gln Ser Asp Glu Thr Trp
 475 480 485
 Lys Met Gly Asp Ile Val His Thr Leu Thr Asn Arg Arg Trp Leu Glu
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 Lys Cys Val Thr Tyr Ala Glu Ser His Asp Gln Ala Leu Val Gly Asp
 505 510 515
 Lys Thr Ile Ala Phe Trp Leu Met Asp Lys Asp Met Tyr Asp Phe Met
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 Ala Leu Asp Arg Pro Ser Thr Pro Thr Ile Asp Arg Gly Ile Ala Leu
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 His Lys Met Ile Arg Leu Ile Thr Met Gly Leu Gly Gly Glu Gly Tyr
 555 560 565
 Leu Asn Phe Met Gly Asn Glu Phe Gly His Pro Glu Trp Ile Asp Phe
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 Pro Arg Gly Pro Gln Arg Leu Pro Ser Gly Lys Phe Ile Pro Gly Asn
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 Asn Asn Ser Tyr Asp Lys Cys Arg Arg Arg Phe Asp Leu Gly Asp Ala
 600 605 610
 Asp Tyr Leu Arg Tyr His Gly Met Gln Glu Phe Asp Gln Ala Met Gln
 615 620 625 630
 His Leu Glu Gln Lys Tyr Glu Phe Met Thr Ser Asp His Gln Tyr Ile
 635 640 645
 Ser Arg Lys His Glu Glu Asp Lys Val Ile Val Phe Glu Lys Gly Asp
 650 655 660
 Leu Val Phe Val Phe Asn Phe His Cys Asn Asn Ser Tyr Phe Asp Tyr
 665 670 675
 Arg Ile Gly Cys Arg Lys Pro Gly Val Tyr Lys Val Val Leu Asp Ser
 680 685 690

Asp Ala Gly Leu Phe Gly Gly Phe Ser Arg Ile His His Ala Ala Glu
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 Arg Arg Ser Arg Ser His Ala Asp Arg Ala Ala Pro Pro Gly Ile Ala
 -45 -40 -35

gg_t gg_c gg_c aa_t gt_g cg_c ct_g ag_t gt_g tt_t tc_t gt_c ca_g tg_c aa_a g_ct 145
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 -30 -25 -20

cg_c cg_g tc_a gg_g gt_g cg_g aa_a g_tc aa_a g_ac aaa tt_c gc_c ac_t g_ca g_ct 193
 Arg Arg Ser Gly Val Arg Lys Val Lys Ser Lys Phe Ala Thr Ala Ala
 -15 -10 -5 -1 1

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 Thr Val Gln Glu Asp Lys Thr Met Ala Thr Ala Lys Gly Asp Val Asp
 5 10 15

ca_t ctc ccc ata tac gac ct_g gac ccc aag ct_g gag ata tt_c aag gac 289
 His Leu Pro Ile Tyr Asp Leu Asp Pro Lys Leu Glu Ile Phe Lys Asp
 20 25 30

ca_t tt_c agg tac cg_g at_g aaa aga tt_c cta gag cag aaa gg_a t_ca att 337
 His Phe Arg Tyr Arg Met Lys Arg Phe Leu Glu Gln Lys Gly Ser Ile
 35 40 45

gaa gaa aat gag gga agt ctt gaa tct ttt tct aaa ggc tat ttg aaa		385
Glu Glu Asn Glu Gly Ser Leu Glu Ser Phe Ser Lys Gly Tyr Leu Lys		
50 55 60 65		
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Phe Gly Ile Asn Thr Asn Glu Asp Gly Thr Val Tyr Arg Glu Trp Ala		
70 75 80		
cct gct gcg cag gag gca gag ctt att ggt gac ttc aat gac tgg aat		481
Pro Ala Ala Gln Glu Ala Glu Leu Ile Gly Asp Phe Asn Asp Trp Asn		
85 90 95		
ggt gca aac cat aag atg gag aag gat aaa ttt ggt gtt tgg tcg atc		529
Gly Ala Asn His Lys Met Glu Lys Asp Lys Phe Gly Val Trp Ser Ile		
100 105 110		
aaa att gac cat gtc aaa ggg aaa cct gcc atc cct cac aat tcc aag		577
Lys Ile Asp His Val Lys Gly Lys Pro Ala Ile Pro His Asn Ser Lys		
115 120 125		
gtt aaa ttt cgc ttt cta cat ggt gga gta tgg gtt gat cgt att cca		625
Val Lys Phe Arg Phe Leu His Gly Gly Val Trp Val Asp Arg Ile Pro		
130 135 140 145		
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Ala Leu Ile Arg Tyr Ala Thr Val Asp Ala Ser Lys Phe Gly Ala Pro		
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Tyr Asp Gly Val His Trp Asp Pro Pro Ala Ser Glu Arg Tyr Thr Phe		
165 170 175		
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Lys His Pro Arg Pro Ser Lys Pro Ala Ala Pro Arg Ile Tyr Glu Ala		
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His Val Gly Met Ser Gly Glu Lys Pro Ala Val Ser Thr Tyr Arg Glu		
195 200 205		
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Phe Ala Asp Asn Val Leu Pro Arg Ile Arg Ala Asn Asn Tyr Asn Thr		
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Val Gln Leu Met Ala Val Met Glu His Ser Tyr Tyr Ala Ser Phe Gly		
230 235 240		
tac cat gtg aca aat ttc ttt gcg gtt agc agc aga tca ggc aca cca		961
Tyr His Val Thr Asn Phe Phe Ala Val Ser Ser Arg Ser Gly Thr Pro		
245 250 255		
gag gac ctc aaa tat ctt gtt gat aag gca cac agt ttg ggt ttg cga		1009
Glu Asp Leu Lys Tyr Leu Val Asp Lys Ala His Ser Leu Gly Leu Arg		
260 265 270		

gtt ctg atg gat gtt gtc cat agc cat gca agt aat aat gtc aca gat		1057	
Val Leu Met Asp Val Val His Ser His Ala Ser Asn Asn Val Thr Asp			
275	280	285	
ggt tta aat ggc tat gat gtt gga caa agc acc caa gag tcc tat ttt		1105	
Gly Leu Asn Gly Tyr Asp Val Gly Gln Ser Thr Gln Glu Ser Tyr Phe			
290	295	300	305
cat gcg gga gat aga ggt tat cat aaa ctt tgg gat agt cg ^g ctg ttc		1153	
His Ala Gly Asp Arg Gly Tyr His Lys Leu Trp Asp Ser Arg Leu Phe			
310	315	320	
aac tat gct aac tgg gag gta tta agg ttt ctt ctt tct aac ctg aga		1201	
Asn Tyr Ala Asn Trp Glu Val Leu Arg Phe Leu Leu Ser Asn Leu Arg			
325	330	335	
tat tgg ttg gat gaa ttc atg ttt gat ggc ttc cga ttt gat gga gtt		1249	
Tyr Trp Leu Asp Glu Phe Met Phe Asp Gly Phe Arg Phe Asp Gly Val			
340	345	350	
aca tca atg ctg tat cat cac cat ggt atc aat gtg ggg ttt act gga		1297	
Thr Ser Met Leu Tyr His His Gly Ile Asn Val Gly Phe Thr Gly			
355	360	365	
aac tac cag gaa tat ttc agt ttg gac aca gct gtg gat gca gtt gtt		1345	
Asn Tyr Gln Glu Tyr Phe Ser Leu Asp Thr Ala Val Asp Ala Val Val			
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tac atg atg ctt gca aac cat tta atg cac aaa ctc ttg cca gaa gca		1393	
Tyr Met Met Leu Ala Asn His Leu Met His Lys Leu Leu Pro Glu Ala			
390	395	400	
act gtt gtt gct gaa gat gtt tca ggc atg ccg gtc ctt tgc cgg cca		1441	
Thr Val Val Ala Glu Asp Val Ser Gly Met Pro Val Leu Cys Arg Pro			
405	410	415	
gtt gat gaa ggt ggg gtt ggg ttt gac tat cgc ctg gca atg gct atc		1489	
Val Asp Glu Gly Val Gly Phe Asp Tyr Arg Leu Ala Met Ala Ile			
420	425	430	
cct gat aga tgg att gac tac ctg aag aat aaa gat gac tct gag tgg		1537	
Pro Asp Arg Trp Ile Asp Tyr Leu Lys Asn Lys Asp Asp Ser Glu Trp			
435	440	445	
tcg atg ggt gaa ata gcg cat act ttg act aac agg aga tat act gaa		1585	
Ser Met Gly Glu Ile Ala His Thr Leu Thr Asn Arg Arg Tyr Thr Glu			
450	455	460	465
aaa tgc atc gca tat gct gag agc cat gat cag tct att gtt ggc gac		1633	
Lys Cys Ile Ala Tyr Ala Glu Ser His Asp Gln Ser Ile Val Gly Asp			
470	475	480	
aaa act att gca ttt ctc ctg atg gac aag gaa atg tac act ggc atg		1681	
Lys Thr Ile Ala Phe Leu Leu Met Asp Lys Glu Met Tyr Thr Gly Met			
485	490	495	

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caa aag atg att cac ttc atc aca atg gcc ctt gga ggt gat ggc tac Gln Lys Met Ile His Phe Ile Thr Met Ala Leu Gly Gly Asp Gly Tyr 515 520 525	1777
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cca aga gaa ggg aac aac tgg agc tat gat aaa tgc aga cga cag tgg Pro Arg Glu Gly Asn Asn Trp Ser Tyr Asp Lys Cys Arg Arg Gln Trp 550 555 560	1873
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gac caa gcg atg aat gcg ctc gat gag aga ttt tcc ttc ctt tcg tcg Asp Gln Ala Met Asn Ala Leu Asp Glu Arg Phe Ser Phe Leu Ser Ser 580 585 590	1969
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act tac gag ggc tac aaa gtg gga tgc gat ttg cct ggg aaa tac aga Thr Tyr Glu Gly Tyr Lys Val Gly Cys Asp Leu Pro Gly Lys Tyr Arg 630 635 640	2113
gta gcc ctg gac tct gat gct ctg gtc ttc ggt gga cat gga aga gtt Val Ala Leu Asp Ser Asp Ala Leu Val Phe Gly Gly His Gly Arg Val 645 650 655	2161
ggc cac gac gtg gat cac ttc acg tcg cct gaa ggg gtg cca ggg gtg Gly His Asp Val Asp His Phe Thr Ser Pro Glu Gly Val Pro Gly Val 660 665 670	2209
ccc gaa acg aac ttc aac aac cgg ccg aac tcg ttc aaa gtc ctt tct Pro Glu Thr Asn Phe Asn Asn Arg Pro Asn Ser Phe Lys Val Leu Ser 675 680 685	2257
ccg ccc cgc acc tgt gtg gct tat tac cgt gta gac gaa gca ggg gct Pro Pro Arg Thr Cys Val Ala Tyr Tyr Arg Val Asp Glu Ala Gly Ala 690 695 700 705	2305
gga cga cgt ctt cac gcg aaa gca gag aca gga aag acg tct cca gca Gly Arg Arg Leu His Ala Lys Ala Glu Thr Gly Lys Thr Ser Pro Ala 710 715 720	2353

gag agc atc gac gtc aaa gct tcc aga gct agt agc aaa gaa gac aag 2401
 Glu Ser Ile Asp Val Lys Ala Ser Arg Ala Ser Ser Lys Glu Asp Lys
 725 730 735

gag gca acg gct ggt ggc aag aag gga tgg aag ttt gcg cgg cag cca 2449
 Glu Ala Thr Ala Gly Gly Lys Lys Gly Trp Lys Phe Ala Arg Gln Pro
 740 745 750

tcc gat caa gat acc aaa tgaagccacg agtccttggt gaggactgga 2497
 Ser Asp Gln Asp Thr Lys
 755

ctggctgccg gcgcctgtt agtagtcctg ctctactgga ctgcgcgcg ctggcgccct 2557
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-30 -25 -20

Arg Arg Ser Gly Val Arg Lys Val Lys Ser Lys Phe Ala Thr Ala Ala
-15 -10 -5 -1 1

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His Leu Pro Ile Tyr Asp Leu Asp Pro Lys Leu Glu Ile Phe Lys Asp
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His Phe Arg Tyr Arg Met Lys Arg Phe Leu Glu Gln Lys Gly Ser Ile
35 40 45

Glu Glu Asn Glu Gly Ser Leu Glu Ser Phe Ser Lys Gly Tyr Leu Lys
50 55 60 65

Phe Gly Ile Asn Thr Asn Glu Asp Gly Thr Val Tyr Arg Glu Trp Ala
70 75 80

Pro Ala Ala Gln Glu Ala Glu Leu Ile Gly Asp Phe Asn Asp Trp Asn
85 90 95

Gly Ala Asn His Lys Met Glu Lys Asp Lys Phe Gly Val Trp Ser Ile
 100 105 110
 Lys Ile Asp His Val Lys Gly Lys Pro Ala Ile Pro His Asn Ser Lys
 115 120 125
 Val Lys Phe Arg Phe Leu His Gly Gly Val Trp Val Asp Arg Ile Pro
 130 135 140 145
 Ala Leu Ile Arg Tyr Ala Thr Val Asp Ala Ser Lys Phe Gly Ala Pro
 150 155 160
 Tyr Asp Gly Val His Trp Asp Pro Pro Ala Ser Glu Arg Tyr Thr Phe
 165 170 175
 Lys His Pro Arg Pro Ser Lys Pro Ala Ala Pro Arg Ile Tyr Glu Ala
 180 185 190
 His Val Gly Met Ser Gly Glu Lys Pro Ala Val Ser Thr Tyr Arg Glu
 195 200 205
 Phe Ala Asp Asn Val Leu Pro Arg Ile Arg Ala Asn Asn Tyr Asn Thr
 210 215 220 225
 Val Gln Leu Met Ala Val Met Glu His Ser Tyr Tyr Ala Ser Phe Gly
 230 235 240
 Tyr His Val Thr Asn Phe Phe Ala Val Ser Ser Arg Ser Gly Thr Pro
 245 250 255
 Glu Asp Leu Lys Tyr Leu Val Asp Lys Ala His Ser Leu Gly Leu Arg
 260 265 270
 Val Leu Met Asp Val Val His Ser His Ala Ser Asn Asn Val Thr Asp
 275 280 285
 Gly Leu Asn Gly Tyr Asp Val Gly Gln Ser Thr Gln Glu Ser Tyr Phe
 290 295 300 305
 His Ala Gly Asp Arg Gly Tyr His Lys Leu Trp Asp Ser Arg Leu Phe
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 325 330 335
 Tyr Trp Leu Asp Glu Phe Met Phe Asp Gly Phe Arg Phe Asp Gly Val
 340 345 350
 Thr Ser Met Leu Tyr His His His Gly Ile Asn Val Gly Phe Thr Gly
 355 360 365
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 370 375 380 385
 Tyr Met Met Leu Ala Asn His Leu Met His Lys Leu Leu Pro Glu Ala
 390 395 400

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 Val Asp Glu Gly Gly Val Gly Phe Asp Tyr Arg Leu Ala Met Ala Ile
 420 425 430
 Pro Asp Arg Trp Ile Asp Tyr Leu Lys Asn Lys Asp Asp Ser Glu Trp
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 Ser Met Gly Glu Ile Ala His Thr Leu Thr Asn Arg Arg Tyr Thr Glu
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 470 475 480
 Lys Thr Ile Ala Phe Leu Leu Met Asp Lys Glu Met Tyr Thr Gly Met
 485 490 495
 Ser Asp Leu Gln Pro Ala Ser Pro Thr Ile Asp Arg Gly Ile Ala Leu
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 Gln Lys Met Ile His Phe Ile Thr Met Ala Leu Gly Gly Asp Gly Tyr
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 Leu Asn Phe Met Gly Asn Glu Phe Gly His Pro Glu Trp Ile Asp Phe
 530 535 540 545
 Pro Arg Glu Gly Asn Asn Trp Ser Tyr Asp Lys Cys Arg Arg Gln Trp
 550 555 560
 Ser Leu Val Asp Thr Asp His Leu Arg Tyr Lys Tyr Met Asn Ala Phe
 565 570 575
 Asp Gln Ala Met Asn Ala Leu Asp Glu Arg Phe Ser Phe Leu Ser Ser
 580 585 590
 Ser Lys Gln Ile Val Ser Asp Met Asn Asp Glu Glu Lys Val Ile Val
 595 600 605
 Phe Glu Arg Gly Asp Leu Val Phe Val Phe Asn Phe His Pro Lys Lys
 610 615 620 625
 Thr Tyr Glu Gly Tyr Lys Val Gly Cys Asp Leu Pro Gly Lys Tyr Arg
 630 635 640
 Val Ala Leu Asp Ser Asp Ala Leu Val Phe Gly Gly His Gly Arg Val
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 Gly His Asp Val Asp His Phe Thr Ser Pro Glu Gly Val Pro Gly Val
 660 665 670
 Pro Glu Thr Asn Phe Asn Asn Arg Pro Asn Ser Phe Lys Val Leu Ser
 675 680 685
 Pro Pro Arg Thr Cys Val Ala Tyr Tyr Arg Val Asp Glu Ala Gly Ala
 690 695 700 705

Gly Arg Arg Leu His Ala Lys Ala Glu Thr Gly Lys Thr Ser Pro Ala
 710 715 720

Glu Ser Ile Asp Val Lys Ala Ser Arg Ala Ser Ser Lys Glu Asp Lys
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gcc gcc tgg ccg gcc gcc gtc ggc gac ccg gcg cgc ccg cgg agg ctc 96
 Ala Ala Trp Pro Ala Ala Val Gly Asp Arg Ala Arg Pro Arg Arg Leu
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cag cgc gtg ctg cgc ccg tgc gtc gcg gag ctg agc agg gag ggg 144
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 Pro His Met
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Gln Arg Val Leu Arg Arg Arg Cys Val Ala Glu Leu Ser Arg Glu Gly
 35 40 45

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att gct gaa ggt tcc atc gat aac aca gta gtt gtg gca agt gag caa 96
Ile Ala Glu Gly Ser Ile Asp Asn Thr Val Val Ala Ser Glu Gln
    20          25               30

gat tct gag att gtg gtt gga aag gag caa gct cga gct aaa gta aca 144
Asp Ser Glu Ile Val Val Gly Lys Glu Gln Ala Arg Ala Lys Val Thr
    35          40               45

caa agc att gtc ttt gta acc ggc gaa gct tct cct tat gca aag tct 192
Gln Ser Ile Val Phe Val Thr Gly Glu Ala Ser Pro Tyr Ala Lys Ser
    50          55               60

ggg ggt cta gga gat gtt tgt ggt tca ttg cca gtt gct ctt gct gct 240
Gly Gly Leu Gly Asp Val Cys Gly Ser Leu Pro Val Ala Leu Ala Ala
    65          70               75             80

cgt ggt cac cgt gtg atg gtt gta atg ccc aga tat tta aat ggt acc 288
Arg Gly His Arg Val Met Val Met Pro Arg Tyr Leu Asn Gly Thr
    85          90               95

tcc gat aag aat tat gca aat gca ttt tac aca gaa aaa cac att cgg 336
Ser Asp Lys Asn Tyr Ala Asn Ala Phe Tyr Thr Glu Lys His Ile Arg
    100         105              110

att cca tgc ttt ggc ggt gaa cat gaa gtt acc ttc ttc cat gag tat 384
Ile Pro Cys Phe Gly Gly Glu His Glu Val Thr Phe Phe His Glu Tyr
    115         120              125

aga gat tca gtt gac tgg gtg ttt gtt gat cat ccc tca tat cac aga 432
Arg Asp Ser Val Asp Trp Val Phe Val Asp His Pro Ser Tyr His Arg
    130         135              140

cct gga aat tta tat gga gat aag ttt ggt gct ttt ggt gat aat cag 480
Pro Gly Asn Leu Tyr Gly Asp Lys Phe Gly Ala Phe Gly Asp Asn Gln
    145         150              155             160

ttc aga tac aca ctc ctt tgc tat gct gca tgt gag gct cct ttg atc 528
Phe Arg Tyr Thr Leu Leu Cys Tyr Ala Ala Cys Glu Ala Pro Leu Ile
    165         170              175

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Leu Glu Leu Gly Gly Tyr Ile Tyr Gly Gln Asn Cys Met Phe Val Val			
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aat gat tgg cat gcc agt cta gtg cca gtc ctt ctt gct gca aaa tat		624	
Asn Asp Trp His Ala Ser Leu Val Pro Val Leu Leu Ala Ala Lys Tyr			
195	200	205	
aga cca tat ggt gtt tat aaa gac tcc cgc agc att ctt gta ata cat		672	
Arg Pro Tyr Gly Val Tyr Lys Asp Ser Arg Ser Ile Leu Val Ile His			
210	215	220	
aat tta gca cat cag ggt gta gag cct gca agc aca tat cct gac ctt		720	
Asn Leu Ala His Gln Gly Val Glu Pro Ala Ser Thr Tyr Pro Asp Leu			
225	230	235	240
ggg ttg cca cct gaa tgg tat gga gct ctg gag tgg gta ttc cct gaa		768	
Gly Leu Pro Pro Glu Trp Tyr Gly Ala Leu Glu Trp Val Phe Pro Glu			
245	250	255	
tgg gcg agg agg cat gcc ctt gac aag ggt gag gca gtt aat ttt ttg		816	
Trp Ala Arg Arg His Ala Leu Asp Lys Gly Glu Ala Val Asn Phe Leu			
260	265	270	
aaa ggt gca gtt gtg aca gca gat cga atc gtg act gtc agt aag ggt		864	
Lys Gly Ala Val Val Thr Ala Asp Arg Ile Val Thr Val Ser Lys Gly			
275	280	285	
tat tcg tgg gag gtc aca act gct gaa ggt gga cag ggc ctc aat gag		912	
Tyr Ser Trp Glu Val Thr Thr Ala Glu Gly Gln Gly Leu Asn Glu			
290	295	300	
ctc tta agc tcc aga aag agt gta tta aac gga att gta aat gga att		960	
Leu Leu Ser Ser Arg Lys Ser Val Leu Asn Gly Ile Val Asn Gly Ile			
305	310	315	320
gac att aat gat tgg aac cct gcc aca gac aaa tgt atc ccc tgt cat		1008	
Asp Ile Asn Asp Trp Asn Pro Ala Thr Asp Lys Cys Ile Pro Cys His			
325	330	335	
tat tct gtt gat gac ctc tct gga aag gcc aaa tgt aaa ggt gca ttg		1056	
Tyr Ser Val Asp Asp Leu Ser Gly Lys Ala Lys Cys Lys Gly Ala Leu			
340	345	350	
cag aag gag ctg ggt tta cct ata agg cct gat gtt cct ctg att ggc		1104	
Gln Lys Glu Leu Gly Leu Pro Ile Arg Pro Asp Val Pro Leu Ile Gly			
355	360	365	
ttt att gga agg ttg gat tat cag aaa ggc att gat ctc att caa ctt		1152	
Phe Ile Gly Arg Leu Asp Tyr Gln Lys Gly Ile Asp Leu Ile Gln Leu			
370	375	380	
atc ata cca gat ctc atg cggt gaa gat gtt caa ttt gtc atg ctt gga		1200	
Ile Ile Pro Asp Leu Met Arg Glu Asp Val Gln Phe Val Met Leu Gly			
385	390	395	400

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Ser Gly Asp Pro Glu Leu Glu Asp Trp Met Arg Ser Thr Glu Ser Ile	
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Phe Lys Asp Lys Phe Arg Gly Trp Val Gly Phe Ser Val Pro Val Ser	
420 425 430	
cac cga ata act gcc ggc tgc gat ata ttg tta atg cca tcc aga ttc	1344
His Arg Ile Thr Ala Gly Cys Asp Ile Leu Leu Met Pro Ser Arg Phe	
435 440 445	
gaa cct tgt ggt ctc aat cag cta tat gct atg cag tat ggc aca gtt	1392
Glu Pro Cys Gly Leu Asn Gln Leu Tyr Ala Met Gln Tyr Gly Thr Val	
450 455 460	
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Pro Val Val His Ala Thr Gly Gly Leu Arg Asp Thr Val Glu Asn Phe	
465 470 475 480	
aac cct ttc ggt gag aat gga gag cag ggt aca ggg tgg gca ttc gca	1488
Asn Pro Phe Gly Glu Asn Gly Glu Gln Gly Thr Gly Trp Ala Phe Ala	
485 490 495	
ccc cta acc aca gaa aac atg ttt gtg gac att gcg aac tgc aat atc	1536
Pro Leu Thr Thr Glu Asn Met Phe Val Asp Ile Ala Asn Cys Asn Ile	
500 505 510	
tac ata cag gga aca caa gtc ctc ctg gga agg gct aat gaa gcg agg	1584
Tyr Ile Gln Gly Thr Gln Val Leu Leu Gly Arg Ala Asn Glu Ala Arg	
515 520 525	
cat gtc aaa aga ctt cac gtg gga cca tgc cgc tga	1620
His Val Lys Arg Leu His Val Gly Pro Cys Arg	
530 535	
<210> 21	
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<400> 21	
Cys Val Ala Glu Leu Ser Arg Glu Asp Leu Gly Leu Glu Pro Glu Gly	
1 5 10 15	
Ile Ala Glu Gly Ser Ile Asp Asn Thr Val Val Val Ala Ser Glu Gln	
20 25 30	
Asp Ser Glu Ile Val Val Gly Lys Glu Gln Ala Arg Ala Lys Val Thr	
35 40 45	
Gln Ser Ile Val Phe Val Thr Gly Glu Ala Ser Pro Tyr Ala Lys Ser	
50 55 60	
Gly Gly Leu Gly Asp Val Cys Gly Ser Leu Pro Val Ala Leu Ala Ala	
65 70 75 80	

Arg Gly His Arg Val Met Val Val Met Pro Arg Tyr Leu Asn Gly Thr
 85 90 95

Ser Asp Lys Asn Tyr Ala Asn Ala Phe Tyr Thr Glu Lys His Ile Arg
 100 105 110

Ile Pro Cys Phe Gly Gly Glu His Glu Val Thr Phe Phe His Glu Tyr
 115 120 125

Arg Asp Ser Val Asp Trp Val Phe Val Asp His Pro Ser Tyr His Arg
 130 135 140

Pro Gly Asn Leu Tyr Gly Asp Lys Phe Gly Ala Phe Gly Asp Asn Gln
 145 150 155 160

Phe Arg Tyr Thr Leu Leu Cys Tyr Ala Ala Cys Glu Ala Pro Leu Ile
 165 170 175

Leu Glu Leu Gly Gly Tyr Ile Tyr Gly Gln Asn Cys Met Phe Val Val
 180 185 190

Asn Asp Trp His Ala Ser Leu Val Pro Val Leu Leu Ala Ala Lys Tyr
 195 200 205

Arg Pro Tyr Gly Val Tyr Lys Asp Ser Arg Ser Ile Leu Val Ile His
 210 215 220

Asn Leu Ala His Gln Gly Val Glu Pro Ala Ser Thr Tyr Pro Asp Leu
 225 230 235 240

Gly Leu Pro Pro Glu Trp Tyr Gly Ala Leu Glu Trp Val Phe Pro Glu
 245 250 255

Trp Ala Arg Arg His Ala Leu Asp Lys Gly Glu Ala Val Asn Phe Leu
 260 265 270

Lys Gly Ala Val Val Thr Ala Asp Arg Ile Val Thr Val Ser Lys Gly
 275 280 285

Tyr Ser Trp Glu Val Thr Thr Ala Glu Gly Gly Gln Gly Leu Asn Glu
 290 295 300

Leu Leu Ser Ser Arg Lys Ser Val Leu Asn Gly Ile Val Asn Gly Ile
 305 310 315 320

Asp Ile Asn Asp Trp Asn Pro Ala Thr Asp Lys Cys Ile Pro Cys His
 325 330 335

Tyr Ser Val Asp Asp Leu Ser Gly Lys Ala Lys Cys Lys Gly Ala Leu
 340 345 350

Gln Lys Glu Leu Gly Leu Pro Ile Arg Pro Asp Val Pro Leu Ile Gly
 355 360 365

Phe Ile Gly Arg Leu Asp Tyr Gln Lys Gly Ile Asp Leu Ile Gln Leu
 370 375 380

Ile Ile Pro Asp Leu Met Arg Glu Asp Val Gln Phe Val Met Leu Gly
 385 390 395 400

Ser Gly Asp Pro Glu Leu Glu Asp Trp Met Arg Ser Thr Glu Ser Ile
 405 410 415

Phe Lys Asp Lys Phe Arg Gly Trp Val Gly Phe Ser Val Pro Val Ser
 420 425 430

His Arg Ile Thr Ala Gly Cys Asp Ile Leu Leu Met Pro Ser Arg Phe
 435 440 445

Glu Pro Cys Gly Leu Asn Gln Leu Tyr Ala Met Gln Tyr Gly Thr Val
 450 455 460

Pro Val Val His Ala Thr Gly Gly Leu Arg Asp Thr Val Glu Asn Phe
 465 470 475 480

Asn Pro Phe Gly Glu Asn Gly Glu Gln Gly Thr Gly Trp Ala Phe Ala
 485 490 495

Pro Leu Thr Thr Glu Asn Met Phe Val Asp Ile Ala Asn Cys Asn Ile
 500 505 510

Tyr Ile Gln Gly Thr Gln Val Leu Leu Gly Arg Ala Asn Glu Ala Arg
 515 520 525

His Val Lys Arg Leu His Val Gly Pro Cys Arg
 530 535

<210> 22
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<220>
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<210> 23
<211> 35
<212> DNA
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<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 23
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<210> 24
<211> 36
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<400> 24
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<210> 25
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<400> 25
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<400> 26
tgcgtcgcgg agctgagcag ggag          24

<210> 27
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<400> 27
Cys Val Ala Glu Leu Ser Arg Glu
    1           5

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<210> 29		
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<210> 33		
<211> 56		
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consensus sequence

<400> 33
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Pro Ala Gln Ala Ser Met Val Ala Pro Phe Thr Gly Leu Lys Ser Ala
20 25 30
Ala Phe Pro Val Ser Arg Lys Gln Asn Leu Asp Ile Thr Ser Ile Ala
35 40 45
Ser Asn Gly Gly Arg Val Gln Cys
50 55

<210> 34
<211> 58
<212> PRT
<213> Zea mays

<400> 34
Met Ala Pro Thr Val Met Met Ala Ser Ser Ala Thr Ala Thr Arg Thr
1 5 10 15
Asn Pro Ala Gln Ala Ser Ala Val Ala Pro Phe Gln Gly Leu Lys Ser
20 25 30
Thr Ala Ser Leu Pro Val Ala Arg Arg Ser Ser Arg Ser Leu Gly Asn
35 40 45
Val Ala Ser Asn Gly Gly Arg Ile Arg Cys
50 55

<210> 35
<211> 58
<212> PRT
<213> Zea mays

<400> 35
Met Ala Gln Ile Leu Ala Pro Ser Thr Gln Trp Gln Met Arg Ile Thr
1 5 10 15
Lys Thr Ser Pro Cys Ala Thr Pro Ile Thr Ser Lys Met Trp Ser Ser
20 25 30
Leu Val Met Lys Gln Thr Lys Lys Val Ala His Ser Ala Lys Phe Arg
35 40 45
Val Met Ala Val Asn Ser Glu Asn Gly Thr
50 55

<210> 36
 <211> 74
 <212> PRT
 <213> Zea mays

<400> 36
 Met Ala Ala Leu Ala Thr Ser Gln Leu Val Ala Thr Arg Ala Gly His
 1 5 10 15

Gly Val Pro Asp Ala Ser Thr Phe Arg Arg Gly Ala Ala Gln Gly Leu
 20 25 30

Arg Gly Ala Arg Ala Ser Ala Ala Asp Thr Leu Ser Met Arg Thr
 35 40 45

Ser Ala Arg Ala Ala Pro Arg His Gln Gln Gln Ala Arg Arg Gly Gly
 50 55 60

Arg Phe Pro Phe Pro Ser Leu Val Val Cys
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<210> 37
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<220>
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<400> 37
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 1 5 10 15

Xaa Ala Trp Pro Ala Ala Val Gly Asp Arg Ala Arg Pro Arg Arg Leu
 20 25 30

Gln Arg Val Leu Arg Arg Arg
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<210> 38
 <211> 5
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic peptide

<400> 38
 Ala Glu Leu Ser Arg
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<210> 39
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<220>
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<222> (2)
<223> Variable amino acid

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<210> 40
<211> 5
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<220>
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<400> 40
Lys Thr Gly Gly Leu
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